80-#107-* 8106

GEOLOGICAL REPORT

PAWNEE CLAIM GROUP

49 14' N. 125 35' W.
Alberni M.D. 92 F-4

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8106
NO.

- by -

John Ostler, M. Sc.

January 16th., 1980.

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GEOLOGICAL REPORT

PAWNEE CLAIM GROUP

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1. INTRODUCTION

The writer was engaged by Pawnee Oil Corporation to supervise a drill program on the Pawnee Claim Group between November 26, 1979 and January 6, 1980. The program comprised 1101.5 feet of BQ core drilled with a Winkie rock drill.

2. PROPERTY

The property (Figure 1) comprises:

Claim	Record No.	Units	Renewal Date	Owner
Pawnee 1	393(12)	10	Mar. 26, 1980	Pawnee Oil Corporation
Pawnee 2	394(18)	18	Mar. 26, 1980	Pawnee Oil Corporation
Pawnee 3	395(16)	16	Mar. 26, 1980	Pawnee Oil Corporation
Tofino	264(9)	2 post	Sept.12, 1980	Lorne Hansen
Tofino 2	29(6)	2	Sept.12, 1980	Lorne Hansen
Tofino 3	77(6)	1	Sept.12, 1980	Lorne Hansen
Tofino 5	86(9)	1	Sept.12, 1980	Sophia Hansen

The Pawnee Claim Group is located at the head of Tofino Inlet on Vancouver Island. The claims are centred on 49 14' N. and 125 35' W. in the Alberni Mining District of British Columbia. Access is by air or water from the Village of Tofino, 28 miles to the west.

3. GEOLOGICAL SETTING

Muller (1968) described the rocks around Tofino Inlet as intermediate volcanics and sediments of the Palaeozoic Sicker Group intruded by a Cretaceous plutonic complex. On the property, the stratigraphy consists of andesites and minor carbonate sediments intruded by quartz diorite.

4. PREVIOUS WORK

There are several copper and molybdenum showings on the property (Figure 2), most of which have been explored intermittantly since 1900. Helmsworth (1955) reviewed the earlier work in the area. From 1900 to 1950 developers were interested in the copper potential of the property. More recently the molybdenite showings have been explored. Haaland (1963) outlined a major program for exploring the moly. showings on the property. Fairbank (1979) reviewed the molybdenite potential of the property and summarized the most important showing areas (Figure 2).

5. CURRENT WORK

Holes were drilled at four sites on the Pawnee claims (Figure 3) to explore molybdenum and copper mineralization previously uncovered by trenching and surface stripping.

Hole 1 was drilled into the Copper Creek showing (Figure 4; Appendix 1). The upper 75 feet of core was not available to the writer. Mr. Wayne Waters (personal communication) inspected that core and found visible molybdenite over a significant length between depths of 30 and 75 feet. Between 75 and 158 feet the drill penetrated a sequence of porphyritic andesites that were intruded by a quartz dioritic stockwork.

Chalcopyrite and bornite are visible throughout the volcanics and are most common in altered andesites near intrusive contacts. The visible copper content of the quartz diorite decreases away from contacts. No where in the hole did copper content exceed 0.1% (visual estimate).

Holes 2 and 3 were drilled into an outcrop of garnet-pyroxene skarn at a location between the central molybdenite showing area and the Copper Creek

showing (Figures 2,3,4; Appendix 1).

No economic concentrations of sulphides are present in these holes. Traces of chalcopyrite in altered andesites indicate that there may be small amounts of copper disseminated throughout the volcanic pile at that location.

The volcanics are porphyritic andesites. Concentrations of plagioclase phenocrysts indicate that these andesites were deposited as flows with thicknesses of between 10 and 20 feet.

Holes 4,5 and 6 were drilled into an outcrop of altered andesite in the central molybdenite area (Figures 2,3,5; Appendix 1). The collar was set within five feet of a surface showing of coarse-grained MoS_2 in quartz-epidote-calcite veins. The veins were not encountered in the drill core.

Two intrusive events are defined by cross-cutting and alteration relationships in Hole 4 (Figure 5). The porphyritic andesites were intruded by a garnet-pyroxene skarn that cuts accross the volcanic stratigraphy at a low angle. The skarn-forming fluids metasomatized andesite wall rocks and xenoliths, converting them to epidote-quartz-chlorite skarn. The skarn and andesite was subsequently intruded by a quartz diorite dyke. This event caused the formation of late quartz-epidote veins and clots in the skarn and andesites that contain coarse-grained MoS_2.

Coarse-grained molybdenite is sparsly disseminated throughout the garnet-pyroxene skarn for 18 feet above its contact with the quartz diorite dyke. Molybdenite is most common near late epidote-quartz concentrations in altered skarn (Figure 5).

There is very little MoS_2 in the quartz diorite itself. However, the quartz diorite there is porphyritic, indicating that it may have been derived from a late molybdenum-rich phase of a differentiated pluton.

Holes 7 and 8 were drilled near the old workings at the Clear Creek showing (Figures 2,3,6; Appendix 1). The holes were drilled along an andesite-quartz diorite contact, beneath an old stope and a mineralized outcrop. On surface, patchy high-grade magnetite-chalcopyrite pods are concentrated near the intrusive contact. A 20 m cross-section chip sample over the drill-site area yielded 0.511% Mo (Fairbank, 1979).

Very little mineralization was found in either Hole 7 or 8. Traces of chalcopyrite and molybdenite were seen in core from near the intrusive contact. The core is stored on the property

6. GEOLOGICAL MODEL

In the area covered by the Pawnee claims, a sequence of andesitic volcanics were intruded by a quartz dioritic pluton. Locally the intrusion was polyphase. Tension cracks formed in the volcanics in the boil above the rising pluton. Metasomatic fluids streaming away from the magmatic front below, deposited the garnet-pyroxene skarns. Later the magma itself intruded the area as sills and dykes. Textures in the quartz diorite indicate that the pluton differentiated into at least two phases, one that is porphyritic.

7. METALOGENESIS

Copper is most common in the andesites and is concentrated in altered rocks near intrusive contacts. The copper content of the intrusive rocks decreases away from volcanic contacts. This indicates that locally the pluton is low in copper. The copper showings on the property are probably derived from concentration of disseminated copper in the volcanics at intrusive contacts.

Molybdenite seems to be derived from the quartz diorite intrusive and

is deposited in any host rock. Molybdenite concentration is greatest at the central molybdenite area where the quartz diorite is porphyritic. At depth, the pluton may have a MoS_2-rich porphyritic phase that is the source of the metal.

8. CONCLUSIONS AND RECOMMENDATIONS

Stratigraphy revealed by the current drilling program indicates that the property is above or off to one side of a large differentiated pluton that may contain a'porphyry molybdenum deposit'. Structural attitudes indicate that the central part of the pluton is at depth to the west of the currently drilled area.

Further exploration of the molybdenum potential of the Pawnee Claim Group would require mapping of the igneous rocks and some deep drilling around Deer Bay at the head of Tofino Inlet.

Respectfully Submitted,

John Ostler, M.Sc.

January 16, 1980.

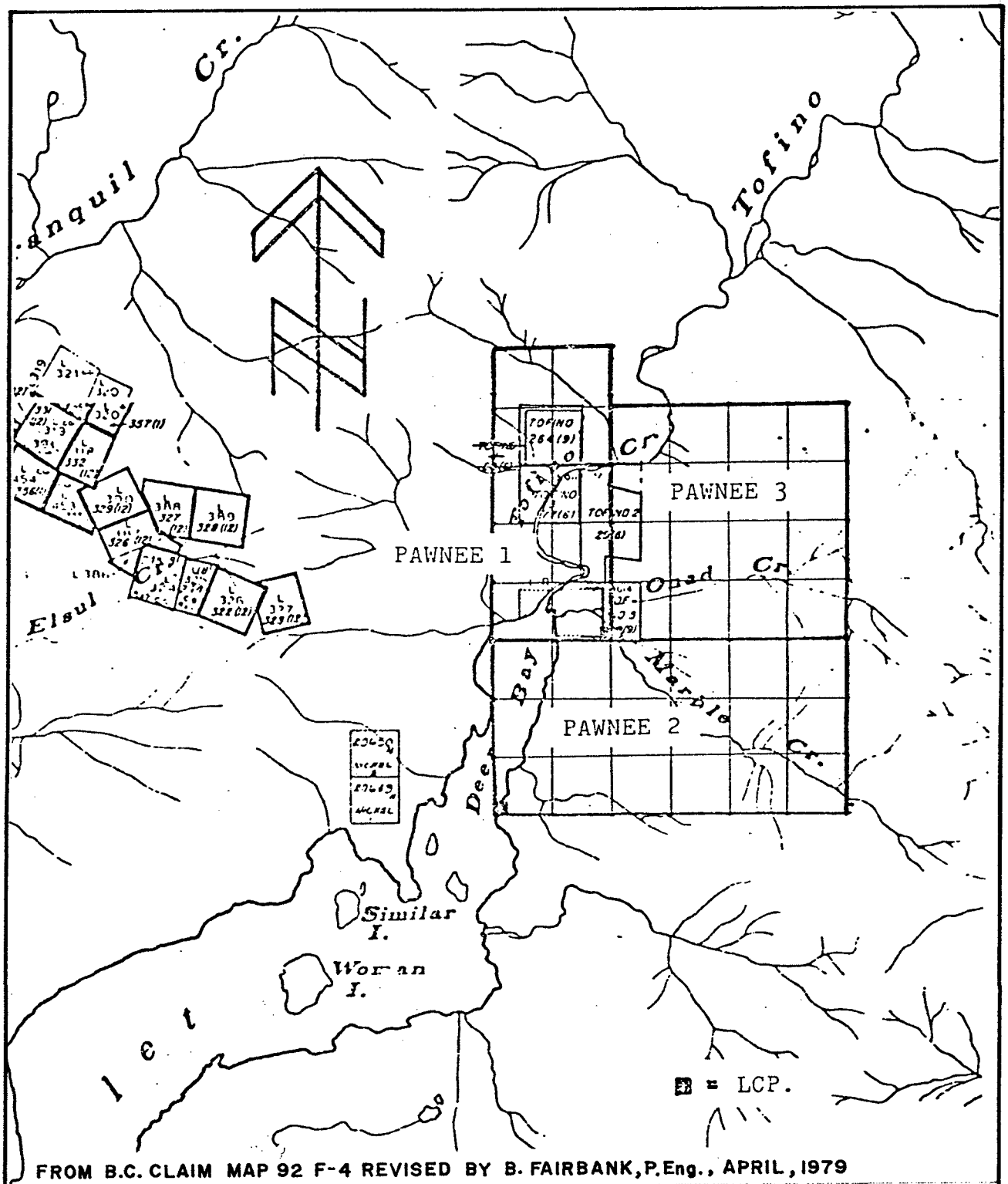
9. REFERENCES

Fairbank, B.D.; 1979: Report on the Tofino and Pawnee Claim Group; Tofino Inlet, Alberni M.D., B.C.; Nevin, Sadlier-Brown, Goodbrand Ltd., 10p.

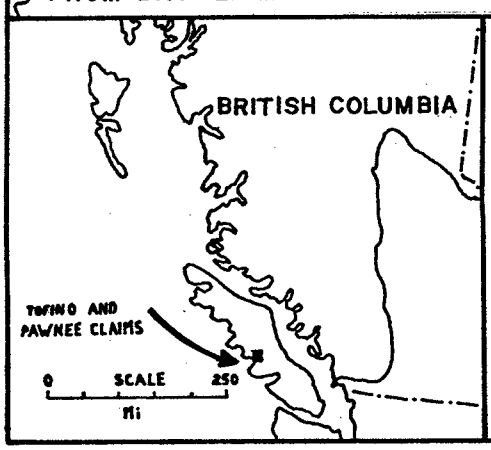
Haaland, O.E. ; 1963: The Molybdenite Deposit at the Tofino Inlet property of Sun-West Minerals Ltd., Tofino British Columbia, O.E. Haaland, P.Eng., 14p.

Hemsworth,F.J.; 1955: Report on the Clear Creek Copper at Tofino, B.C.; Fred J. Hemsworth, Mining Engineer, 11p.

Muller, J.E. ; 1968 Alberni, British Columbia: Geological Survey of Canada Map 17-1968
Geological Survey of Canada Paper 68-50



FROM B.C. CLAIM MAP 92 F-4 REVISED BY B. FAIRBANK, P.Eng., APRIL, 1979



PAWNEE OIL CORPORATION

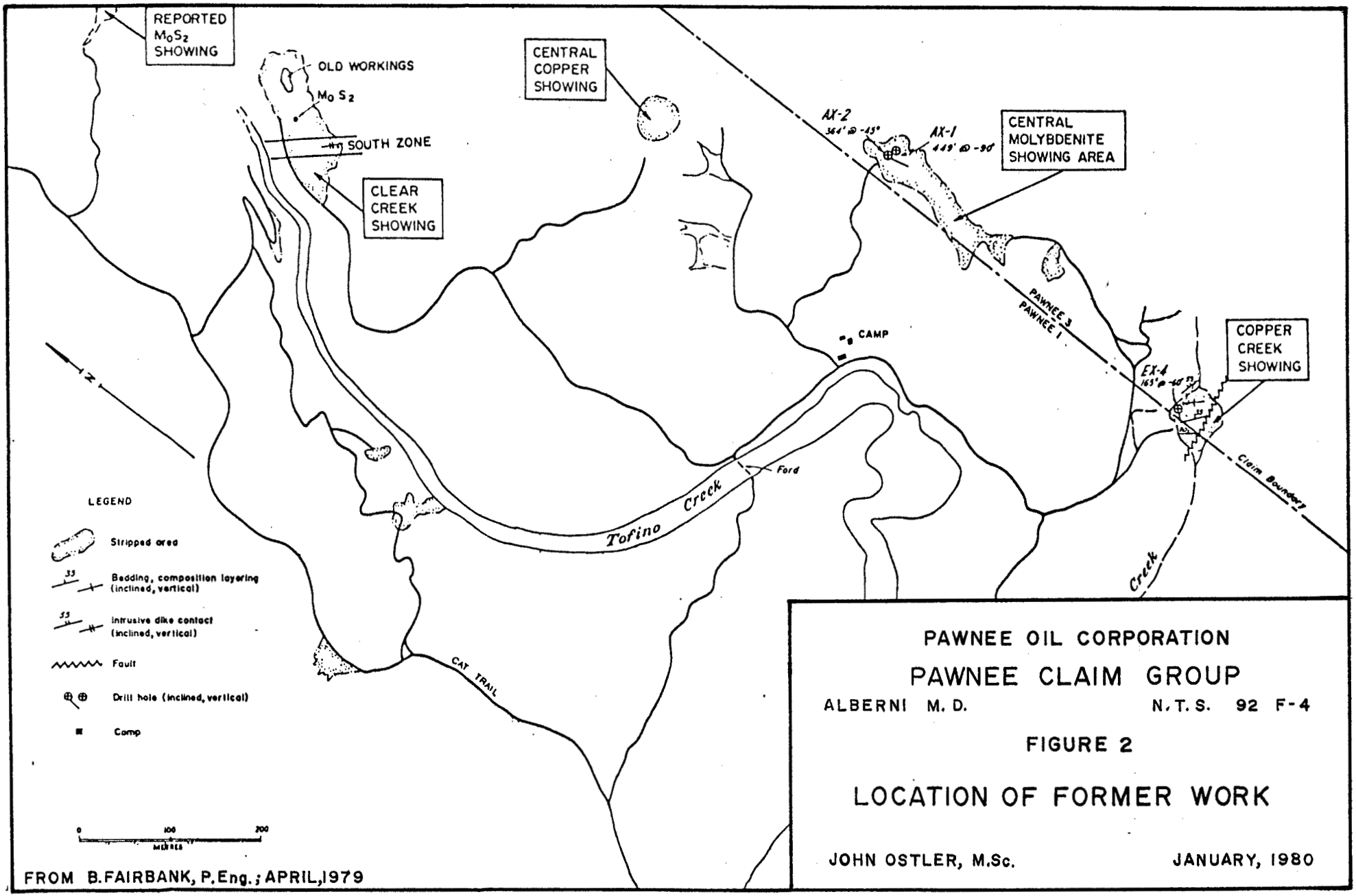
PAWNEE CLAIM GROUP

ALBERNI M.D. N.T.S. 92 F-4

FIGURE 1

LOCATION OF TOFINO AND PAWNEE CLAIMS

JOHN OSTLER, M.Sc. JANUARY, 1980



PAWNEE OIL CORPORATION

PAWNEE CLAIM GROUP

ALBERNI M. D. N.T.S. 92 F-4

FIGURE 2

LOCATION OF FORMER WORK

JOHN OSTLER, M.Sc. JANUARY, 1980

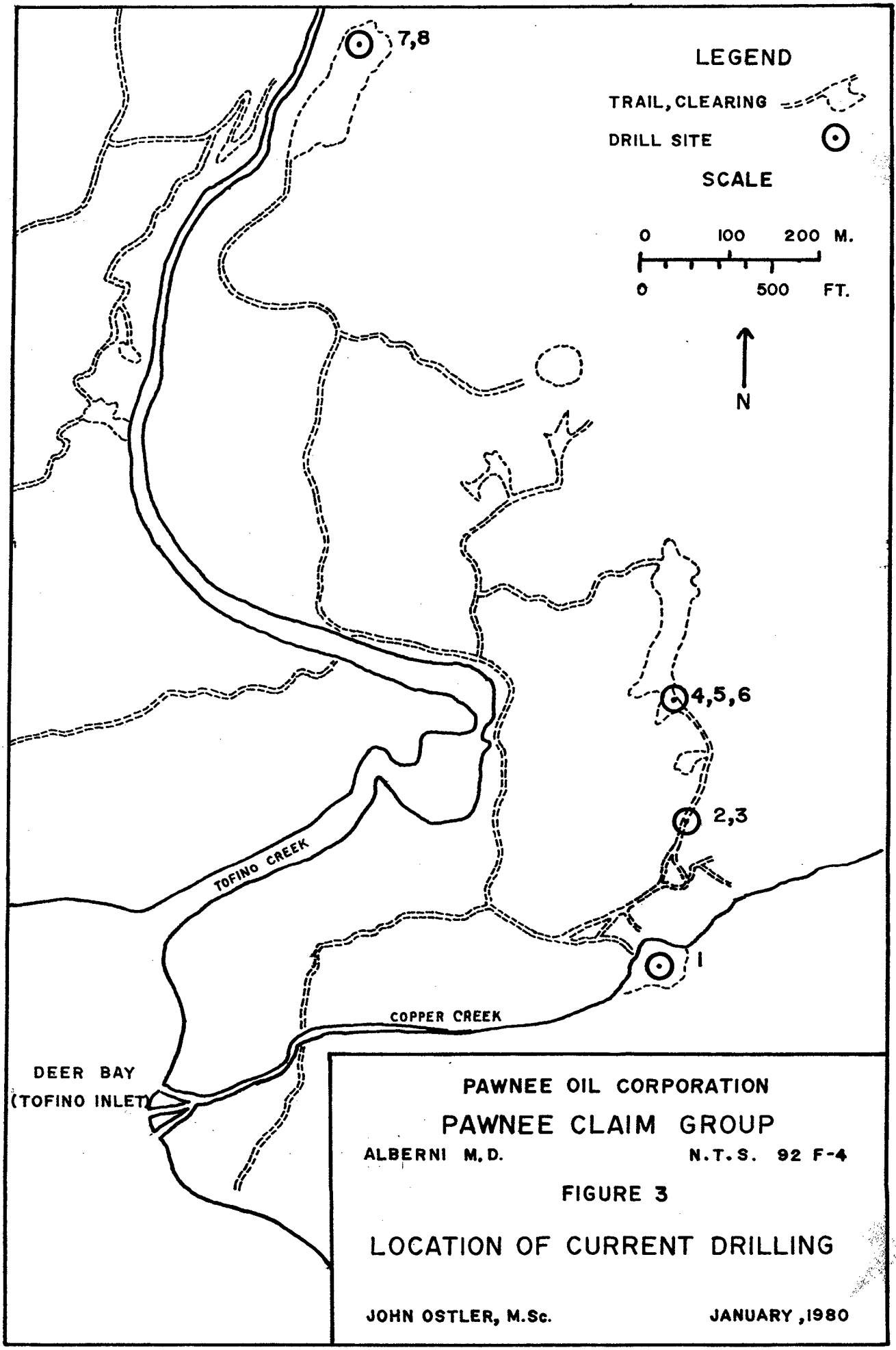


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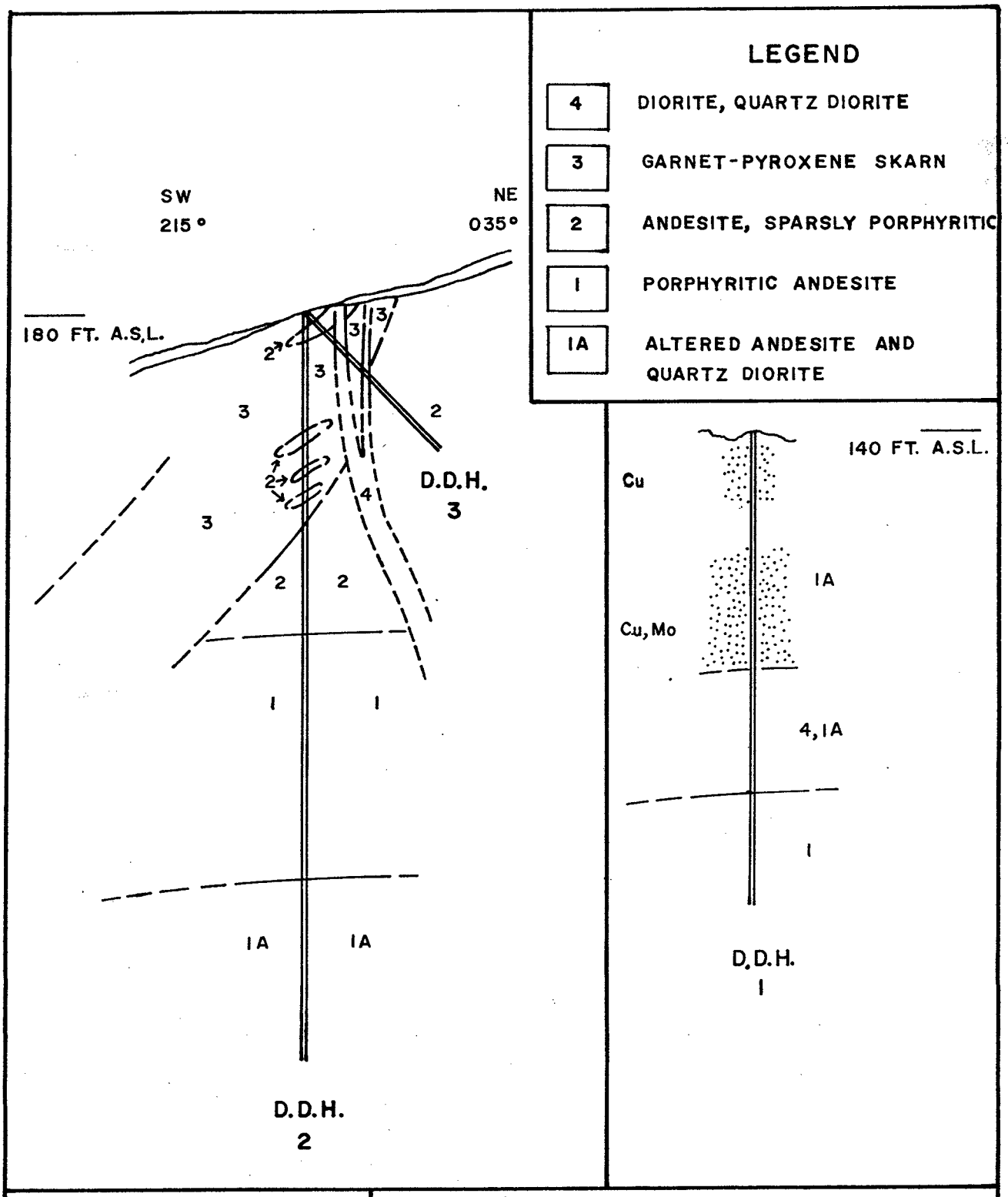
FIGURE 3

LOCATION OF CURRENT DRILLING

JOHN OSTLER, M.Sc. JANUARY, 1980



SCALE

0 50 100 FT

0 10 20 30 M

VERTICAL AND HORIZONTAL

NOTE: SEE FIGURE 3 FOR LOCATION OF HOLES

PAWNEE OIL CORPORATION

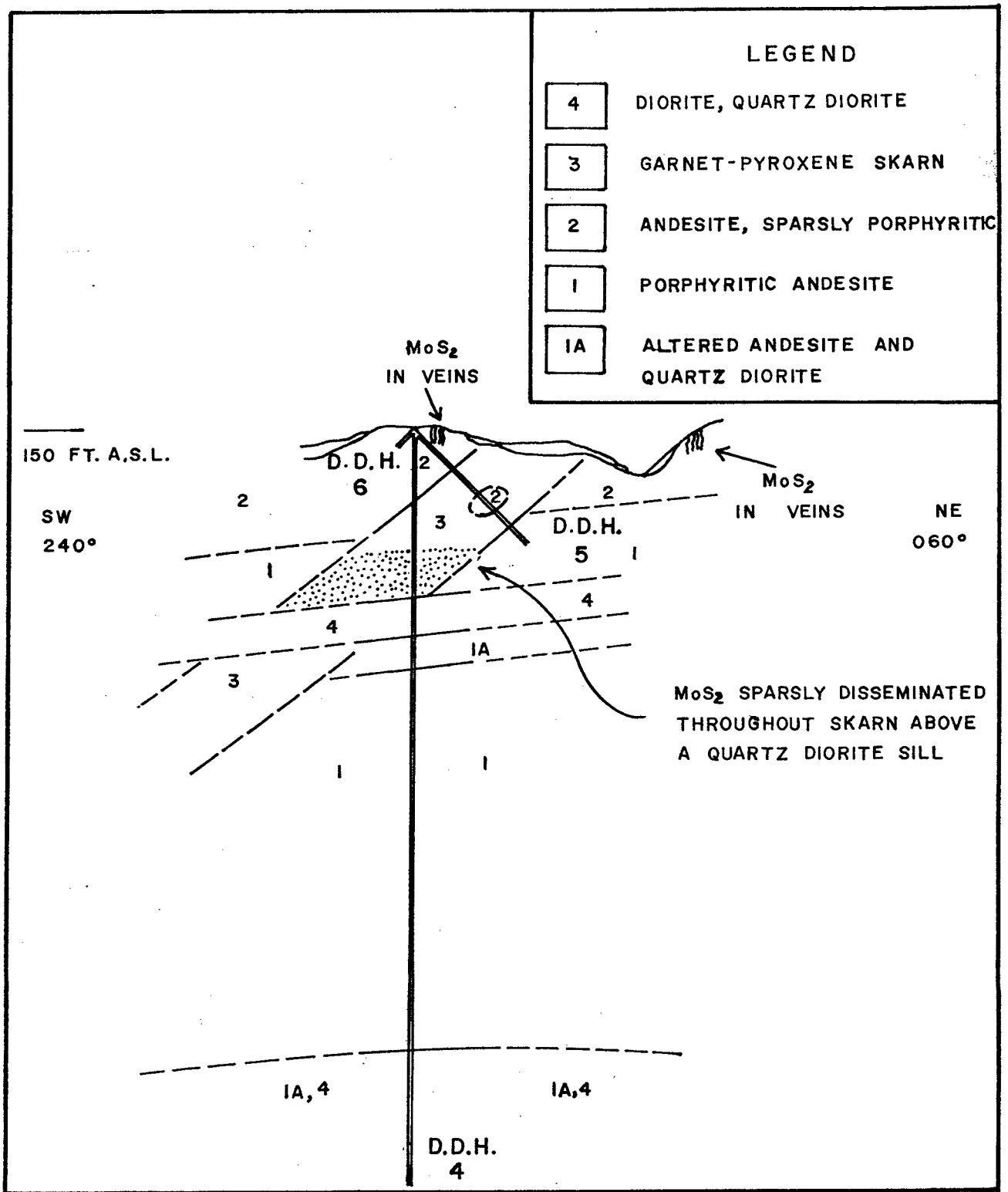
PAWNEE CLAIM GROUP

ALBERNI M.D. N.T.S. 92 F-4

FIGURE 4

DRILL HOLES 1, 2 & 3

JOHN OSTLER, M.Sc. JANUARY, 1980



SCALE

0 50 100 FT

0 10 20 30 M

VERTICAL AND HORIZONTAL

NOTE: SEE FIGURE 3 FOR LOCATION OF HOLES

PAWNEE OIL CORPORATION

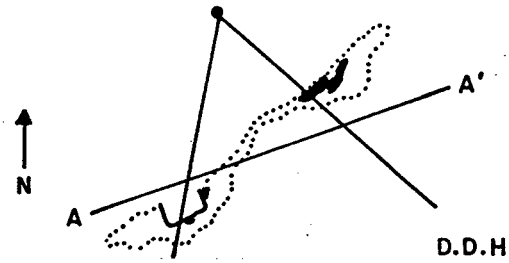
PAWNEE CLAIM GROUP

ALBERNI M.D. N.T.S. 92 F-4

FIGURE 5

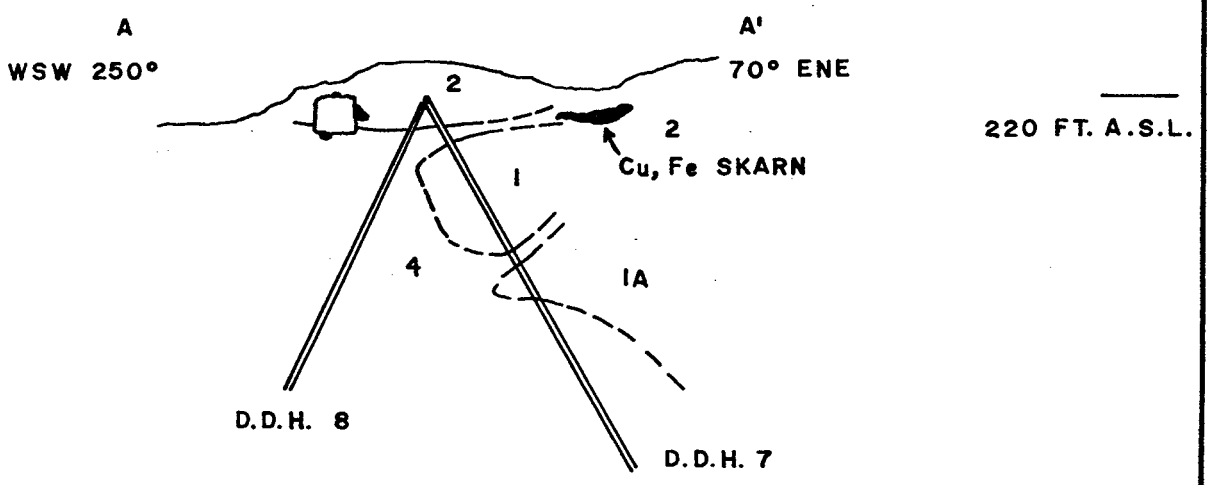
DRILL HOLES 4,5&6

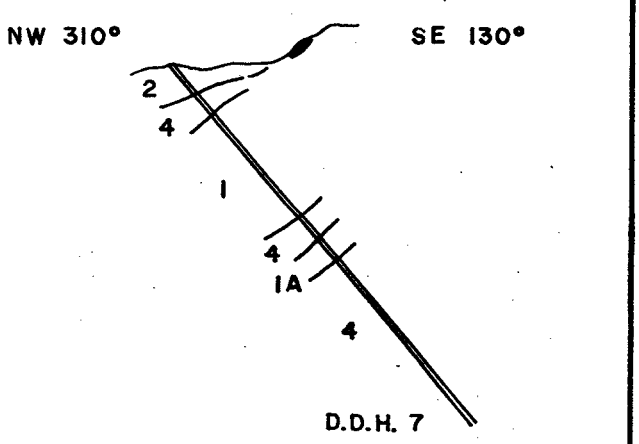
JOHN OSTLER, M.Sc. JANUARY, 1980

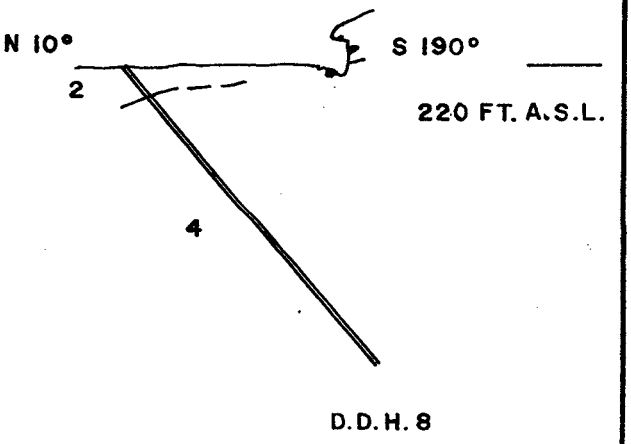


LEGEND

4	DIORITE, QUARTZ DIORITE
3	GARNET-PYROXENE SKARN
2	ANDESITE, SPARSLY PORPHYRITIC
1	PORPHYRITIC ANDESITE
1A	ALTERED ANDESITE AND QUARTZ DIORITE







SCALE

0 50 100 FT

0 10 20 30 M

VERTICAL AND HORIZONTAL

NOTE: SEE FIGURE 3 FOR LOCATION OF HOLES

PAWNEE OIL CORPORATION

PAWNEE CLAIM GROUP

ALBERNI M.D. N.T.S. 92 F-4

FIGURE 6

DRILL HOLES 7 & 8

JOHN OSTLER, M.Sc. JANUARY, 1980

APPENDIX 1
DRILL HOLE DATA

Drill Hole No.	Bearing (degrees)	Dip	Elevation (feet)	Length (feet)	Core Recovery
1		-90	140	158.0	over 95% in all drill holes
2		-90	180	250.0	
3	035	-45	180	62.5	
4		-90	150	251.0	
5	060	-45	150	150.0	
6	180	-45	150	8.0	
7	130	-50	220	121.0	
8	190	-50	220	101.0	

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July 22, 1980.

Mr. R. Rutherford,
Chief Gold Commissioner,
Parliament Buildings,
Victoria, B.C.,
V8V 1X4.

Dear Mr. Rutherford:

I will try to answer the question regarding the diamond drilling on the Tofino Mineral Claim.

1. Core logged by John Ostler.
2. Core stored on Tofino Claim.
3. John Ostler is presently working in the Yukon, and will be back in August. John is a Geology Graduate from Carleton University.

If any additional information is required please contact our office.

Yours truly,

W. Waters, Geologist.

DIAMOND DRILL RECORD, HOLE NO. 4

PROPERTY CLEAR CREEK TOFINO GROUP

SHEET NUMBER 1 of 3 | SECTION FROM ___ TO ___ | STARTED DEC 1 1979

LATITUDE ___ | DATUM ___ | COMPLETED DEC 9, 1979

DEPARTURE ___ | BEARING ___ | ULTIMATE DEPTH 251'

ELEVATION 150' | DIP 90° ↓ | PROPOSED DEPTH ___

DEPTH FEET	CORE RECOV	DESCRIPTION	CORE SAMPLE NO.	FOOTAGE	CORE ASSAYS AG.	CU.	PB.	ZN.	SLUDGE SAMPLE NO.	FOOTAGE	SLUDGE ASSAYS AG.	CU.	PB.	ZN.
0-20'	+90%	PORPHYRITIC ANDESITE		0-10'										
		- dark green aphanitic rock with plagioclase		10-20'										
		phenocrysts.												
		- PHENOCRYSTS - oligoclase → andesine < 0.5 cm long												
		fractured - make up < 10% of rock - unevenly												
		distributed												
		- SULPHIDES - minute pyrite + chalcopyrite subhedra												
		in epidote quartz veins and in matrix of												
		rock - sulphides = <1% of volume.												
20-23.5'		ANDESITE REPLACED BY VEINS OF AMYTHEST, CHLORITE		20-25'-30'										
		EPIDOTE												
		- some yellow secondary mineral may be												
		POWELLITE (T. CHISHOLM)												
		- pyrite is common in chloritic phase												
23.5'		1" THICK BAND OF CHALCOPYRITE												

DIAMOND DRILL RECORD,

HOLE NO. 4

PROPERTY CLEAR CREEK TOFINO GROUP

SHEET NUMBER 2 of 3 | SECTION FROM ____ TO ____ | STARTED DEC 1 1979

LATITUDE ____ | DATUM ____ | COMPLETED DEC 9, 1979

DEPARTURE ____ | BEARING ____ | ULTIMATE DEPTH 251'

ELEVATION 150' | DIP 90° ↓ | PROPOSED DEPTH ____

DEPTH FEET	CORE RECOV.	DESCRIPTION	CORE SAMPLE NO.	FOOTAGE	CORE ASSAYS AG.	CU.	PB.	ZN.	SLUDGE SAMPLE NO.	FOOTAGE	SLUDGE ASSAYS AG.	CU.	PB.	ZN.
23.5 - 38		GARNET PYROXENE SKARN.		25-40'										
		- with minor epidote-calcite - quartz segregations		40 - 50'										
		- minor pyrite + chalco with epidote		50 - 58'										
		40-45' altered andesite												
		48-58' MoS_2 in SKARN - especially near												
		epidote concentrations Mo < .2%												
58 - 68'		PORPHYRITIC QUARTZ DIORITE		53-68										
		- somewhat sheared.												
		- contains pyrite and a trace of CHALCO.												
68 - 80'		PORPHORITIC DACITE - ANDESITE - flows		68-80'										
		- may be silicified andesite												
		- traces of pyrite throughout												
80 - 205'		PORPHYRITIC ANDESITE FLOWS												
		- dips NEAR HORIZONTAL ~80° from core axis												
		- mid green sparsely porphyritic flow centres 15' THICK												
		- highly porphyritic flow tops 1-3' THICK												

DIAMOND DRILL RECORD, HOLE NO. 4

PROPERTY CLEAR CREAK (TOFINO GROUP)

SHEET NUMBER 3 of 3 | SECTION FROM ___ TO ___ | STARTED DEC. 1, 1979

LATITUDE ___ | DATUM ___ | COMPLETED DEC. 9, 1979

DEPARTURE ___ | BEARING ___ | ULTIMATE DEPTH 251'

ELEVATION 150' | DIP 90° ↓ | PROPOSED DEPTH ___

DEPTH FEET	CORE RECOV	DESCRIPTION	CORE SAMPLE NO.	FOOTAGE	CORE ASSAYS AG.	CU.	PB.	ZN.	SLUDGE SAMPLE NO.	FOOTAGE	SLUDGE ASSAYS AG.	CU.	PB.	ZN.
		PHENOCRYSTS - ~~[illegible]~~ mostly subhedral Plagioclase												
		some amphibole alteration to chlorite												
		- sulphides - pyrite - minor pyrrhotite												
205'-251		PORPHYRITIC QUARTZ DIORITE WITH VOLCANIC XENOLITHS												
		- some pyrite												

DIAMOND DRILL RECORD,

HOLE NO. 5

PROPERTY TOFINO

SHEET NUMBER 1 of 1 | SECTION FROM ____ TO ____ | STARTED ____

LATITUDE ____ | DATUM ____ | COMPLETED ____

DEPARTURE ____ | BEARING N 60° E | ULTIMATE DEPTH ____

ELEVATION 150' | DIP ▽45° | PROPOSED DEPTH ____

DEPTH FEET	CORE RECOV	DESCRIPTION	CORE SAMPLE NO.	FOOTAGE	CORE ASSAYS AG.	CU.	PB.	ZN.	SLUDGE SAMPLE NO.	FOOTAGE	SLUDGE ASSAYS AG.	CU.	PB.	ZN.
0 - 16'		fine grained andesite - some minor calcite quartz filled fractures - minor pyrite												
16 - 30.5'		red and green garnet - diopside skarn - minor epidote + calcite												
		contains fragments of volcanics & rare beds NO SULPHIDES												
30.5 - 36'		silicified volcanics (andesite)												
36' - 42'		garnet diopside skarn fine grained andesite												
42' - 45'		dyke of garnet - diopside skarn												
		Contact angle 70° from core axis												
45 - 52'		Porphyritic andesite - fine grained light green matrix												
		PHENOCRYSTS - PLAGIOCLASE ANDESINE-OLIGOCLASE 25-30% TL												
		- BIOTITE + HORNBLENDE < 5%												
		- sulphides - pyrite - pyrrhotite												

DIAMOND DRILL RECORD,

HOLE NO. 6

PROPERTY PAWNEE CLAIMS

SHEET NUMBER 1 of 1 | SECTION FROM ___ TO ___ | STARTED ___

LATITUDE ___ | DATUM ___ | COMPLETED ___

DEPARTURE ___ | BEARING 180° | ULTIMATE DEPTH 8'

ELEVATION 150' | DIP -45° | PROPOSED DEPTH ___

DEPTH FEET	CORE RECOV	DESCRIPTION	CORE SAMPLE NO.	FOOTAGE	CORE ASSAYS				SLUDGE SAMPLE		SLUDGE ASSAYS			
					AG.	CU.	PB.	ZN.	NO.	FOOTAGE	AG.	CU.	PB.	ZN.
0 - 8'	+90%	fine grained, altered andesite no economic sulphides												

DIAMOND DRILL RECORD,

HOLE NO. 7

PROPERTY TOFINO

SHEET NUMBER 1 of 1 SECTION FROM ___ TO ___

LATITUDE ___ DATUM ___

DEPARTURE ___ BEARING 130° S 50° E

ELEVATION 223 453' DIP -50°

STARTED DEC 18, 1979 DRILLERS OUT FOR XMAS DEC 20 - JAN 1

COMPLETED JAN 2 1980

ULTIMATE DEPTH 121'

PROPOSED DEPTH ___

DEPTH FEET	CORE RECOV	DESCRIPTION	CORE SAMPLE NO.	FOOTAGE	CORE ASSAYS AG.	CU.	PB.	ZN.	SLUDGE SAMPLE NO.	FOOTAGE	SLUDGE ASSAYS AG.	CU.	PB.	ZN.
0-7'		fine grained andesite												
7-15'		QUARTZ DIORITE DYKE - no sulphides												
15'-50'		PORPHYRITIC ANDESITE												
		- feldspar (An 20-50) phenocrysts grain size 1-5 mm												
		comprise 25-30% of rock - phenocrysts are concentrated												
		at flow margins flows are 10-15' thick.												
		MATRIX light green fine grained.												
		- very little sulphide pyrite.												
50'-121'		QUARTZ DIORITE												
		- AMPHIBOLE - PLAG, - QTZ grain size 3 mm												
		- not porphyritic												
		- volcanic xenolith 58-65'												
		- sulphides - minor pyrite - trace pyrrhotite												

DIAMOND DRILL RECORD,

HOLE NO. 8

PROPERTY TOFINO

SHEET NUMBER 1 of

SECTION FROM ___ TO ___

STARTED JAN DEC 4 1980

LATITUDE ___

DATUM ___

COMPLETED JAN DEC 6 1980

DEPARTURE ___

BEARING 190° S 10° W

ULTIMATE DEPTH 101'

ELEVATION ~~930~~ 923'

DIP ▽ 50°

PROPOSED DEPTH ___

DEPTH FEET	CORE RECOV	DESCRIPTION	CORE SAMPLE NO.	FOOTAGE	CORE ASSAYS AG.	CU.	PB.	ZN.	SLUDGE SAMPLE NO.	FOOTAGE	SLUDGE ASSAYS AG.	CU.	PB.	ZN.
0 - 10'		ALTERED FINE GRAINED ANDESITE												
10' - 101'		- QUARTZ DIORITE												
		- AMPHIBOLE, PLAG & QUARTZ												
		grain size 4 MM												
		- contains andesitic xenoliths and some narrow												
		epidote - quartz - filled fractures												
		1% epidote quartz mineralization with minor												
		magnetite												

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Helicopter Van. Island Hel.
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1572.00 50% of 3144.00 → 1572.00

Fixed Wing West Coast Air
Vancouver. B.C

20% of 2171.64 → 434.32

434.32.

Additional Diamond Drilling
costs. $ 6857.30

50% of 6857.30 → 3428.6

3428.65

30,128.47 Total